

Southerly extension of the known range of the mangrove *Bruguiera cylindrica*

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Abstract

This report describes the discovery of the mangrove *Bruguiera cylindrica* near Cairns, Australia. This is a southerly extension to the known range of approximately 170 km.

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Bruguiera cylindrica is a mangrove that occurs in India and Sri Lanka through the Malay Archipelago to New Guinea and northern Australia. In Australia, it is known from estuaries in north Queensland from the Jardine River (10°55' S, 142°13' E) in the north to the Jeanie River (14°40' S, 144°55' E) 72 km NNW of Hopevale in the south east (Duke 2006), with a single record further south on the upper Endeavor River near Cooktown (15°27' S, 145°13' E) (Queensland Government 2015) (Fig. 1).



Figure 1. Locations at which *Bruguiera cylindrica* is known to occur in Australia.

The orange line is the main known range, the black square the previously reported southern outlier, and the black circle the location of records reported in this paper. The base map was downloaded from Google Maps.

In January 2016, when I was observing the mangrove forest along Moodys Creek and Chinamans Creek in Cairns, I noticed a mangrove in flower and took some photographs. Based on the photographs, I identified the tree as *B. cylindrica*, this being confirmed on site by Wendy Cooper based on the features of the petals, calyx lobes and hypocotyl on 17 January 2016. *Bruguiera cylindrica* has creamy white petals with shortly bilobed apices and two to three bristles (Fig. 2), and the calyx lobes on the propagule stay open and almost perpendicular to the hypocotyl (Figs. 2, 3). These features distinguish this species from other *Bruguiera* species in the area.

After further searching, I found three more places where *B. cylindrica* occurs, all within 400 meters of each other and the original site (Table 1, Fig. 4). The first tree found (BC1) is of moderate size (about 7 m tall with a diameter of 11 cm) and seems to be regrowth on a once-cleared bank. The second site (BC2) is on the west side of Chinamans Creek, where one large tree (Fig. 5) was identified based on the calyx lobes examined in the canopy using a high resolution image taken with a telephoto lens (Fig. 6). The third site (BC3) contains a number of trees of the species, forming a grove with other mangrove species (Fig. 7). Some trees of *B. cylindrica* are about 10 m tall with diameters of over 40 cm (Table 1). Most of the large trees were flowering at the time of observation. The fourth site (BC4) contains even larger trees than those of BC3 and also forms a grove (Fig. 8) with medium to

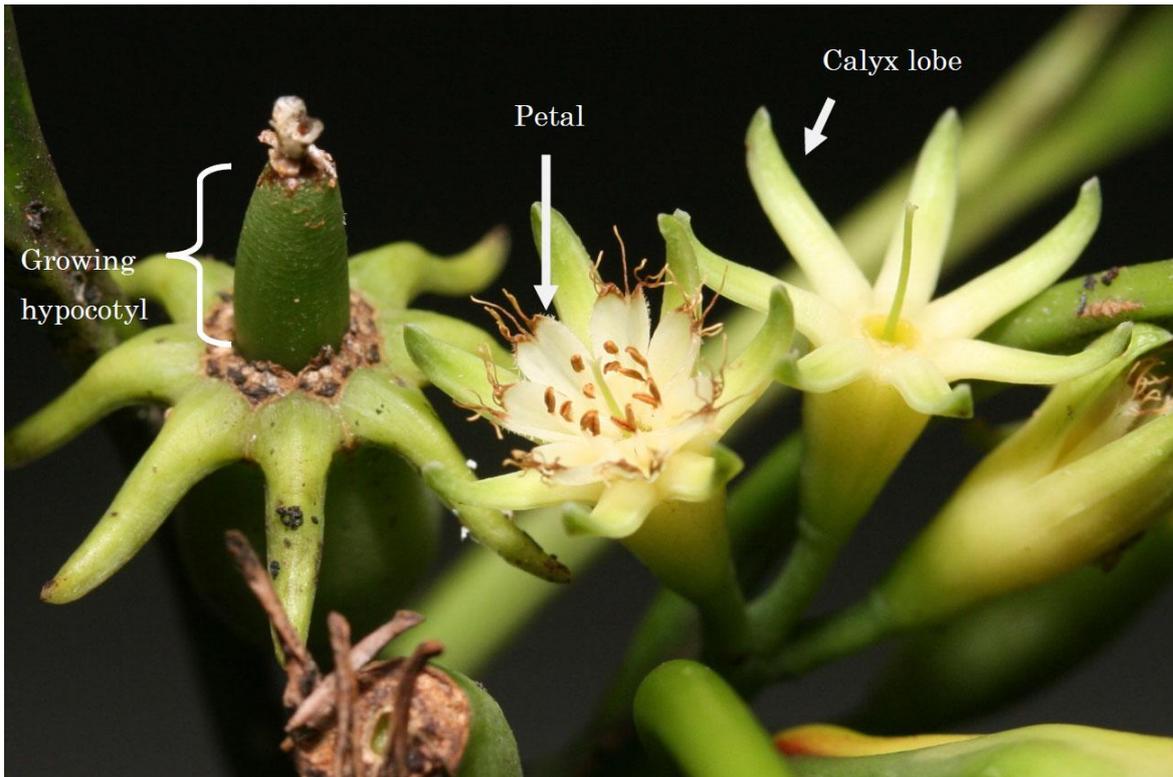


Figure 2. Flowers and developing propagule of *Bruguiera cylindrica*, showing distinctive traits of the species.
Photographed by the author at site BC1.



Figure 3. Extended hypocotyl showing the calyx lobes open almost perpendicular to it.
Photographed by the author at site BC1.

Table 1. Locations at which *Bruguiera cylindrica* was found near Cairns, north Queensland, Australia. DBH = diameter at breast height. All measurements are of *B. cylindrica*. Coordinate datum: WGS84.

Site	Coordinates	Remarks
BC1	S16° 56.645', E145° 45.097'	A solitary tree, c. 7 m tall, DBH 11 cm. A collection has been made, for which the herbarium registration is still in process; collection number is W.Cooper 2312, Kudo & Venables
BC2	S16° 56.856', E145° 45.109'	Apparently a solitary tree, but inaccessible due to crocodile risk. Estimated height: 20 m. This tree has a dense canopy with a large number of flowers and propagules (Figs. 5,6) and is the largest tree of this species I have found near Cairns.
BC3	S16° 56.797', E145° 45.117'	Forms a mangrove forest 8–10 m tall with other several mangrove species including one <i>Lumnitzera littorea</i> (also quite rare in the Cairns City area). As I was so excited about finding the red flowers of <i>L. littorea</i> , I was blind to BC3 for some time. DBH of a sample of larger trees: 15, 15.5, 19.5, 25.5, 41 and 46 cm. Much more than 30 small to medium size trees, with DBH less than 10 cm, are present.
BC4	S16° 56.828', E145° 45.153'	Forms a mangrove forest 10–15 tall with a number of large trees. DBH of a sample of larger trees: 25.5, 26, 33, 38.5, 44.5, 47, 49, 51 and 55 cm. Only a few small trees with DBH less than 5 cm are present.

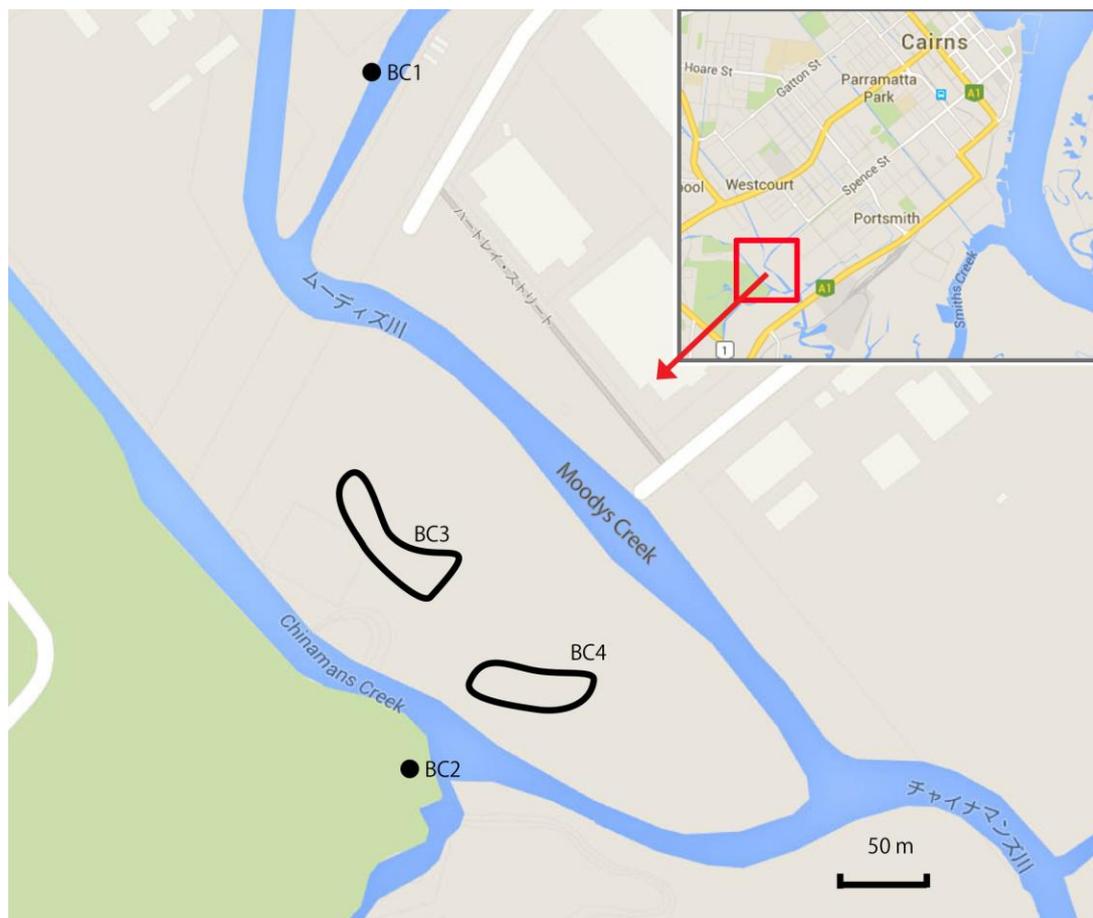


Figure 4. Locations at which *Bruguiera cylindrica* was found near Cairns. Location codes are as in Table 1. The base map was downloaded from Google Maps.



Figure 5. The canopy of *Bruguiera cylindrica* at site BC2.
Photographed by the author from the east bank of Chinamans Creek.



Figure 6. Flowers and propagules of *Bruguiera cylindrica* at site BC2.
Photographed by the author with a telephoto lens.



Figure 7. A number of small to medium size trees of *Bruguiera cylindrica* are also present in the understory of site BC3.
Photographed by the author.



Figure 8. The understory of site BC4 with medium to large size trees of *Bruguiera cylindrica*.

Photographed by the author.

larger size trees with diameters of over 10 cm. Some trees seem very old and are about 15 m tall with diameters of over 50 cm (Table 1). Those old trees had only few flowers at the time of observation.

The stand at site BC3 contain trees of a range of sizes including small to medium size trees less than 10 cm in diameter (Table 1). This evidence, and that the tree at site BC1 appears to be the result of colonisation, strongly suggests that the species is reproducing successfully in the Cairns area.

As a result of these finds, the known range of *B. cylindrica* has been extended to 16°56' S, 145°45' E (Fig. 1), approximately 170 km SSE of the previously-known southernmost record. The species may occur a little further south as the creek system flows south and joins the large intertidal mangrove forest of Trinity Inlet.

The origin of these stands of *B. cylindrica* is unknown. Some trees are considerably taller than the 10 m height reported for the species by Duke (2006) and are considered as fully grown trees in consideration of their diameters. Thus, some of the trees are likely to have been present for many years but overlooked until now. Perhaps they were present prior to European arrival in the district.

Acknowledgements

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